



**UNIVERSITY OF SWAZILAND**  
**Faculty of Health Sciences**  
**DEGREE IN ENVIRONMENTAL HEALTH**  
**FINAL EXAMINATION PAPER 2007-8**

**TITLE OF PAPER** : **HEALTH STATISTICS**

**COURSE CODE** : **HSC 307**

**DURATION** : **2 HOURS**

**MARKS** : **100**

**INSTRUCTIONS** :

- READ THE QUESTIONS & INSTRUCTIONS CAREFULLY**
- ANSWER ANY FOUR QUESTIONS**
- EACH QUESTION CARRIES 25 MARKS.**
- WRITE NEATLY & CLEARLY**
- NO PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM.**
- BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.**

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.**

### **QUESTION 1**

The following data represent the number of cattle killed by motor vehicles during 1994 for eight towns.

2343, 1240, 1088, 600, 497, 1925, 1480, 458

Find each of these

- a. Mean
- b. Median
- c. Mode
- d. Range
- e. Variance

(25 Marks)

### **QUESTION 2**

- a. Name the FOUR basic sampling techniques (12 marks)
- b. What is the basic requirement for a sample (3 marks)
- c. Interviewing selected people at a local supermarket can be considered an example of (i) ----- sampling. Fill the blank (5 marks)
- d. When all subjects under study are used, the group is called what? Choose the correct answer (5 marks)
  - a. Population
  - b. Large group
  - c. Sample
  - d. Study group

(25 Marks)

### **QUESTION 3**

- a. Compute the following
  - (i) If an event cannot happen, what is assigned to its probability
  - (ii) What is the range of the values of the probability of an event
  - (iii) If the probability that it will rain tomorrow is 0.85, what is the probability that it will not rain tomorrow
  - (iv) At a particular school with 200 male students, 58 play football, 40 play basketball, and 8 play both. What is the probability that a randomly selected male student plays neither sport
  - (v) A survey found that 68% of book buyers are 40 years or older. If two book buyers are selected at random, find the probability that both are 40 years or older.

(25 Marks)

#### QUESTION 4

If 75% of students are able to pass a test, find the mean, variance and standard deviation of the number of students who pass the test in a sample of 180

(25 Marks)

#### QUESTION 5

Find the area under the standard normal distribution curve for each

- (i) Between  $z = 0$  and  $z = 1.95$
- (ii) Between  $z = 0$  and  $z = 1.95$
- (iii) Between  $z = 1.32$  and  $z = 1.82$
- (iv) Between  $z = -1.05$  and  $z = 2.05$
- (v) Between  $z = -0.03$  and  $z = 0.53$

(25 Marks)

#### QUESTION 6

A radio manufacture claims that 65% of teenagers 13 to 16 years old have their own portable radios. A researcher wishes to test the claim and selects a random sample of 80 teenagers. She finds that 57 have their own portable radios at  $\alpha = 0.05$ . Is the radio manufacturer correct?

(25 Marks)

Table A.1 Areas in one tail of the standard normal curve

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.500	0.496	0.492	0.488	0.484	0.480	0.476	0.472	0.468	0.464
0.1	0.460	0.456	0.452	0.448	0.444	0.440	0.436	0.433	0.429	0.425
0.2	0.421	0.417	0.413	0.409	0.405	0.401	0.397	0.394	0.390	0.386
0.3	0.382	0.378	0.374	0.371	0.367	0.363	0.359	0.356	0.352	0.348
0.4	0.345	0.341	0.337	0.334	0.330	0.326	0.323	0.319	0.316	0.312
0.5	0.309	0.305	0.302	0.298	0.295	0.291	0.288	0.284	0.281	0.278
0.6	0.274	0.271	0.268	0.264	0.261	0.258	0.255	0.251	0.248	0.245
0.7	0.242	0.239	0.236	0.233	0.230	0.227	0.224	0.221	0.218	0.215
0.8	0.212	0.209	0.206	0.203	0.200	0.198	0.195	0.192	0.189	0.187
0.9	0.184	0.181	0.179	0.176	0.174	0.171	0.169	0.166	0.164	0.161
1.0	0.159	0.156	0.154	0.152	0.149	0.147	0.145	0.142	0.140	0.138
1.1	0.136	0.133	0.131	0.129	0.127	0.125	0.123	0.121	0.119	0.117
1.2	0.115	0.113	0.111	0.109	0.107	0.106	0.104	0.102	0.100	0.099
1.3	0.097	0.095	0.093	0.092	0.090	0.089	0.087	0.085	0.084	0.082
1.4	0.081	0.079	0.078	0.076	0.075	0.074	0.072	0.071	0.069	0.068
1.5	0.067	0.066	0.064	0.063	0.062	0.061	0.059	0.058	0.057	0.056
1.6	0.055	0.054	0.053	0.052	0.051	0.049	0.048	0.047	0.046	0.046
1.7	0.045	0.044	0.043	0.042	0.041	0.040	0.039	0.038	0.038	0.037
1.8	0.036	0.035	0.034	0.034	0.033	0.032	0.031	0.031	0.030	0.029
1.9	0.029	0.028	0.027	0.027	0.026	0.026	0.025	0.024	0.024	0.023
2.0	0.023	0.022	0.022	0.021	0.021	0.020	0.020	0.019	0.019	0.018
2.1	0.018	0.017	0.017	0.017	0.016	0.016	0.015	0.015	0.015	0.014
2.2	0.014	0.014	0.013	0.013	0.013	0.012	0.012	0.012	0.011	0.011
2.3	0.011	0.010	0.010	0.010	0.010	0.009	0.009	0.009	0.009	0.008
2.4	0.008	0.008	0.008	0.008	0.007	0.007	0.007	0.007	0.007	0.006
2.5	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005
2.6	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
2.7	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
2.8	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
2.9	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001
3.0	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3.2	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
3.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3.4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000